



**PUGET SOUND ENERGY**  
*The Energy To Do Great Things*

# SETTLEMENT AGREEMENT ARTICLE 512 BALD EAGLE NIGHT ROOST SURVEYS

SEASON ONE RESULTS: NOVEMBER 2009 – FEBRUARY 2010

BAKER RIVER HYDROELECTRIC PROJECT  
FERC No. 2150



**Puget Sound Energy**  
Bellevue, Washington

**May 2010**

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## 1.0 Executive Summary

This bald eagle night roost survey report summarizes the results of season one of the bald eagle night roost surveys conducted between November 2009 and February 2010 to implement the “Bald Eagle Management Plan” for the Baker River Hydroelectric Project. The study has been prepared in compliance with settlement agreement article 512 (SA 512), “Bald Eagle Night Roost Surveys,” and settlement agreement article 513 (SA 513), “Bald Eagle Management Plan,” of the *Order on Offer of Settlement, Issuing New License and Dismissing Amendment Application as Moot* dated October 17, 2008 (the “license”). This report was prepared by Puget Sound Energy.

This report summarizes the survey methods and results in accordance with SA 512 and SA 513, which include:

- Background
- The survey area
- Survey protocol and methods
- Survey results
- Discussion
- Survey data sheets and maps

No bald eagle communal night roosts were identified in the Baker basin during the 2009-2010 winter season, although bald eagle activity was observed at the project.

## 2.0 Introduction

This bald eagle night roost survey report has been prepared per settlement agreement article 512 (SA 512), “Bald Eagle Night Roost Surveys,” consistent with settlement agreement article 513 (SA 513), “Bald Eagle Management Plan” for the Baker River Hydroelectric Project. Surveys were conducted in consultation with the Terrestrial Resource Implementation Group (TRIG), and were coordinated with the Washington Department of Fish and Wildlife (WDFW).

Puget Sound Energy conducted the surveys to monitor bald eagle wintering behavior within and around the project from November 2009 through February 2010 for the purpose of identifying bald eagle winter night roosts within or near the project boundary.

## 3.0 Background

Bald eagle night roost surveys have occurred extensively along the Skagit River, but little is known about bald eagle communal roost activity in the Baker basin, and no night roosts have yet been identified in the vicinity of the Baker project. Currently, there are five known nesting pairs of bald eagles in the Baker basin near the project, and some of these eagles may be present year-round.

The lands surrounding Lake Shannon are privately owned. If a night roost is identified during the bald eagle night roost surveys conducted per SA 512, affected landowners

would receive a copy of the survey report. Because the US Forest Service (USDA-FS) owns the land surrounding Baker Lake, a night roost identified there would not be within the jurisdictional purview of PSE to provide protection measures beyond those of the land owner. Consequently, Puget Sound Energy concentrated its survey efforts on Lake Shannon where protective measures could be undertaken as a project feature.

## 4.0 Study Area and Methods

### 4.1 Study Area

Bald eagle night roost surveys were conducted at various survey points within the Baker River Project boundary around Lake Shannon (figure 1) to focus on areas that might benefit from additional protection as active night roost habitat.

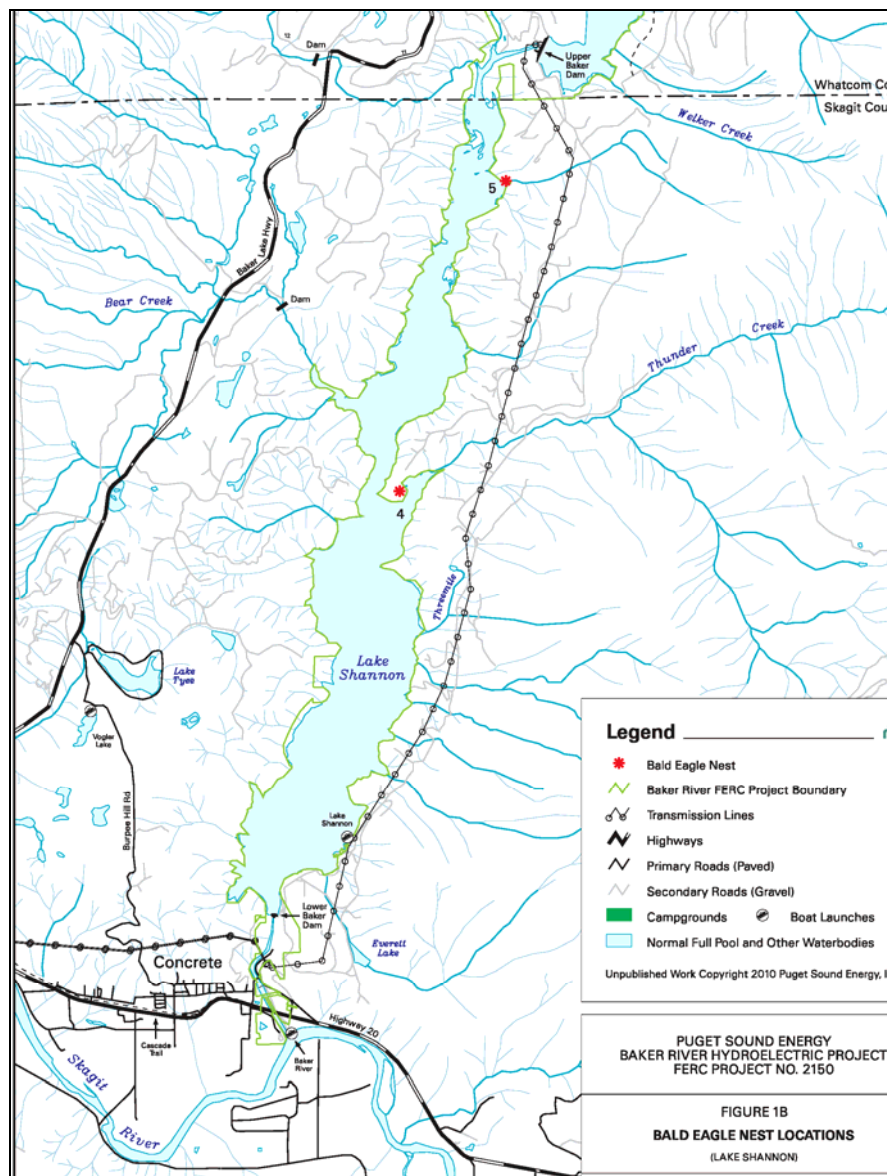


Figure 1. Map of Lake Shannon with project boundary and bald eagle nests

## 4.2 Methods

The bald eagle night roost survey protocol was consistent with Washington Department of Fish and Wildlife (WDFW) and the Nature Conservancy (TNC) night roost protocols, and was agreed on by the TRIG. Surveys were conducted twice monthly from November 2009 through February 2010. Each survey began 1 ½ hours before official sunset time and continued until a half-hour after official sunset time. All surveys included both boat and ground observation methods.

During each survey, all surveyors began by scanning Lake Shannon by boat, traveling from the boat launch at the southeast end of the reservoir and continuing along the western shore to the north end of the lake. Upon reaching the north end of the lake, surveyors were individually dropped off at stations as the boat returned south. If surveyors observed eagle(s) perching during the initial boat survey, then at least one surveyor was stationed in view of the perched eagle(s).

Surveyors recorded weather, time, and the numbers, locations, and behavior of all eagles observed during the surveys. The number of surveyors ranged from three to six, but was typically five per survey. Survey data was recorded on data forms consistent with the WDFW survey forms and approved by the TRIG. Bald eagle observations were also noted on a map by individual surveyors and then compiled in a summary map for each survey date.

## 5.0 Results

### 5.1 Data Summary

The following table summarizes the data collected for each survey date during season 1 of the Baker bald eagle night roost surveys. Section 6 of this report provides detailed data forms and observation maps.

Table 1. Bald eagle night roost data summary.

| Survey Date | Total bald eagle observations | Number of bald eagles perching | Behavior Summary   |
|-------------|-------------------------------|--------------------------------|--|
| November 9  | 2                             | 2                              | Only two eagle observations; no roosting behavior.   |
| November 19 | 0                             | 0                              | No eagle observations during this survey.  |
| December 2  | 3                             | 2                              | Two eagles perched together, then flew individually across the lake to the same area. One eagle was seen on the bank, possibly feeding. No roosting behavior observed. |
| December 30 | 4                             | 1                              | No roosting behavior observed.   |
| January 15  |                               |                                | Peak of eagle activity observed at the project. Eagles were mainly flying in thermals, soaring, and perching for short durations. No roosting behavior observed.       |
| January 28  | 8                             | 7                              | Eagles mainly perched near the tops of conifers for short durations, one possible pair of eagles flew off together, no roosting behavior observed.                     |
| February 11 | 9                             | 9                              | Eagles mainly perched near the tops of conifer trees, most flew off before dark, no roosting behavior observed.  |
| February 25 | 5                             | 5                              | Eagles mainly perched in conifers, one in a snag. No roosting behavior observed.   |

## 5.2 Discussion

Several factors may have influenced bald eagle communal roosting behavior during winter 2009-2010. The 2009-2010 winter season was relatively mild, without extreme weather events. Thus, the bald eagles in the Baker basin may have exhibited less communal winter roosting activity than normal. There seems to be consistent winter use of the Skagit River basin, which is close enough in proximity to the Baker River basin that any bald eagles using the Baker River basin during the day may have returned to the Skagit River communal roosts in the evening.

Most of the bald eagles observed perching were in or near the tops of conifers, whereas typical night roost behavior involves multiple eagles perched in hardwood trees, near the trunks or on lower branches where the birds are protected from the elements. Also, most of the bald eagles observed took off from their perches before dark.

The historical annual peak of bald eagle activity in the Skagit Basin was consistent with the survey results on Lake Shannon, with the highest number of observations occurring on January 15. However, most of the observed activity included soaring on thermals with short durations of perching.



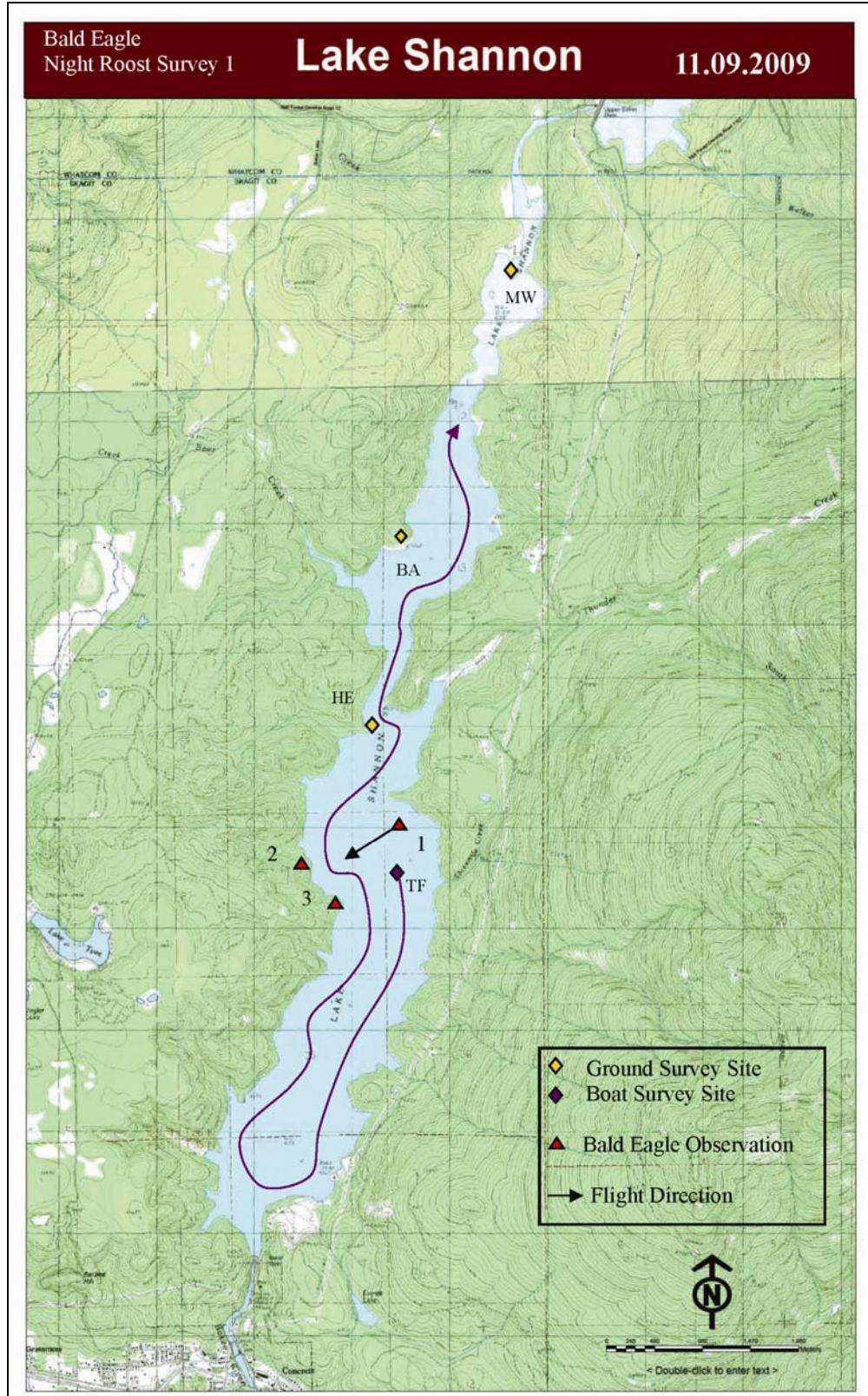


Figure 3. Map of Baker River Project bald eagle night roost survey observations, November 9, 2009.





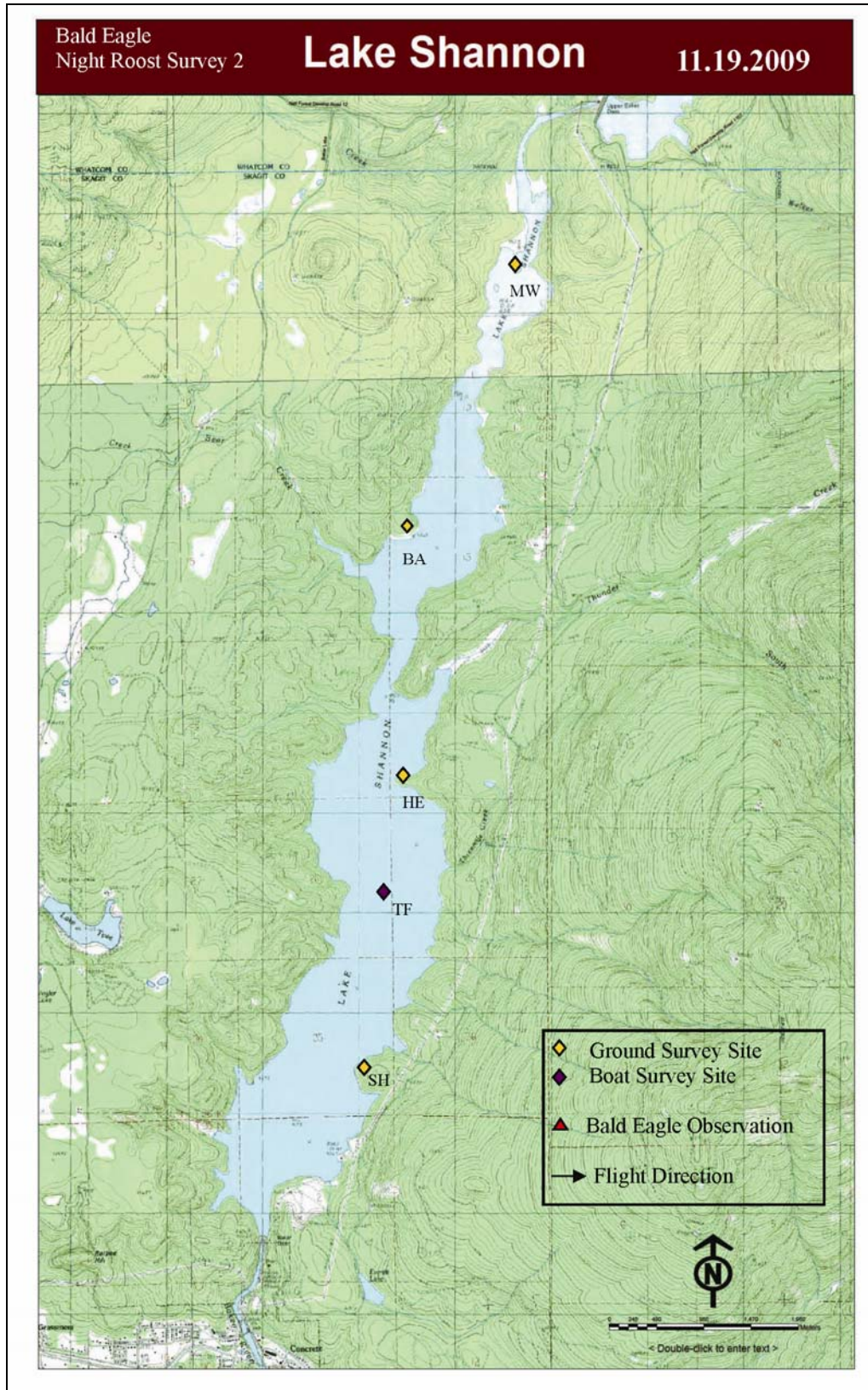


Figure 5. Map of Baker River Project bald eagle night roost survey observations, November 11, 2009 (no observations).



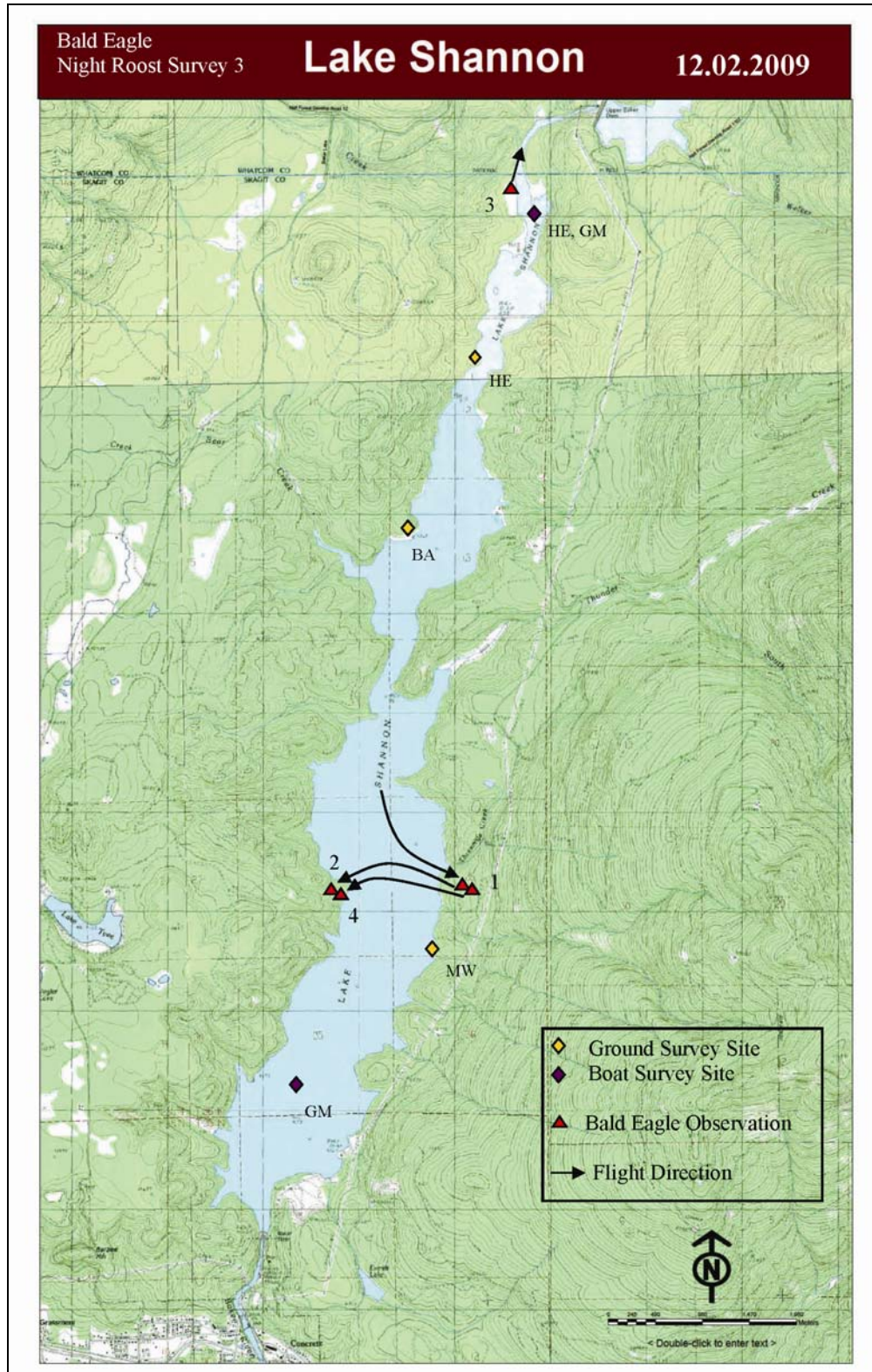


Figure 7. Map of Baker River Project bald eagle night roost survey observations, December 2, 2009.



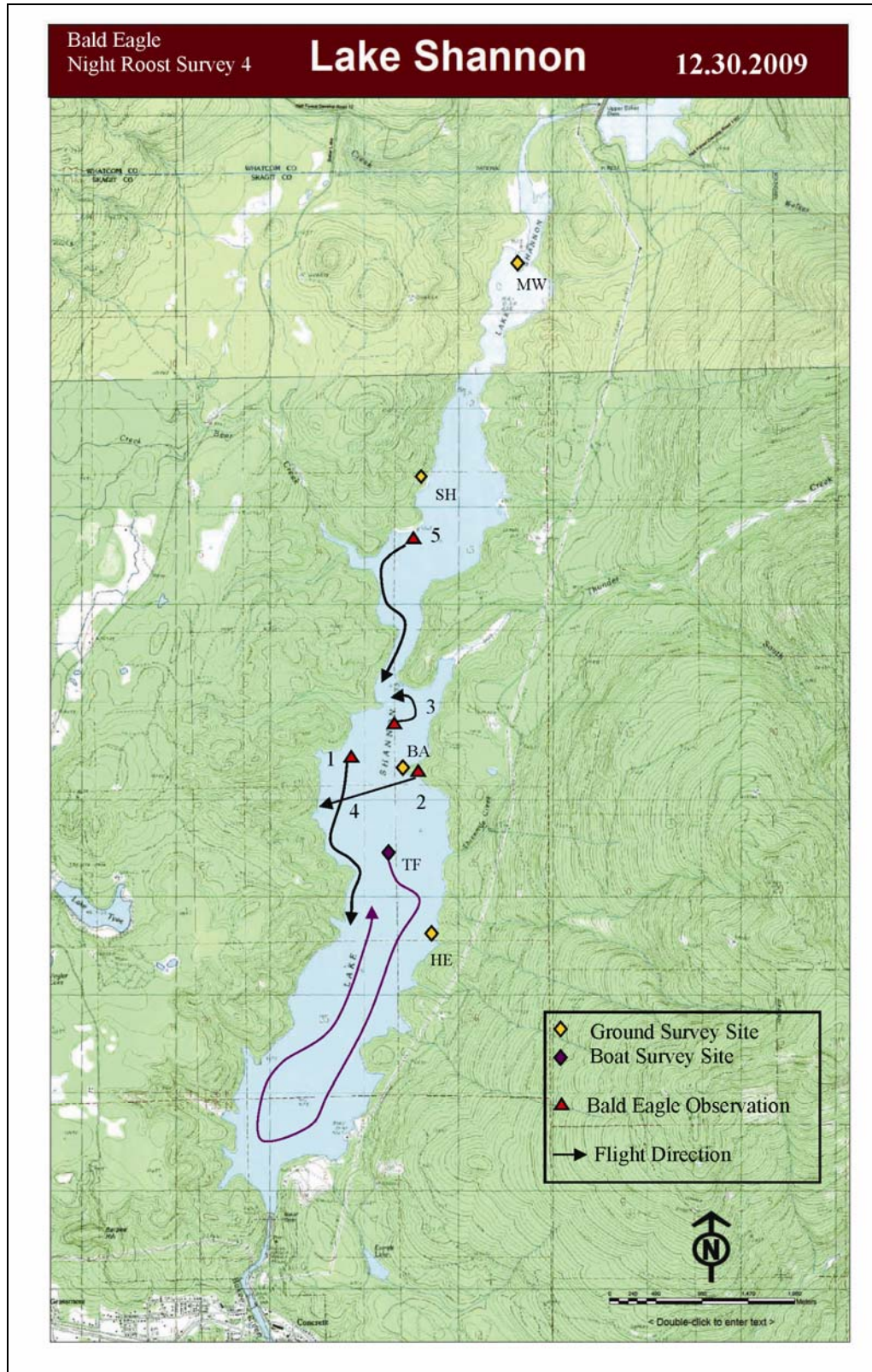


Figure 9. Map of Baker River Project bald eagle night roost survey observations, December 30, 2009.

**BALD EAGLE WINTER NIGHT ROOST OBSERVATION FORM**

Conduct 1.5 hours before sunset to 0.5 hour after sunset

| Age Class  | Activity (Last Observed) | Perch Type |
|------------|--------------------------|------------|
| 1=Adult    | 1=Perching               | 1=Snag     |
| 2=Subadult | 2=Feeding                | 2=Conifer  |
| 3=Unknown  | 3=Flying                 | 3=Hardwood |
|            | 4=Roosting               | 4=Other    |

**Date:** 1-15-2010

**Observer(s):** Haley Edwards, Tony Fuchs, Scott Heller, Nethaneal Overman, Mel Walters (PSE), Brock Applegate (WDFW)

**Roost or Site Name:** Lake Shannon

**Observation Time:** Arrival: 14:35    Departure: 17:00

**Weather Conditions:** Wind: C, L    (*C=calm, L=light breeze, G=gusty*)

**Wind Direction:**

**Cloud Cover:** O, S    (*C=clear, S=scattered clouds, O=overcast, G=ground fog*)

**Precip:** M, N    (*N=none, R=rain, M=misty, W=Showers, S=snow, F=persistent fog*)

**Visibility:** G    (*E=excellent >1 mile, G=good 600'-1 mile, F=fair 300'-600', P=poor 0-300'*)

**Temperature (Approx.):** 55 °F

| <u>Total Birds Observed</u> | <u>Final Roost Count</u> |
|-----------------------------|--------------------------|
|-----------------------------|--------------------------|

| Time  | Perch Type | Age Class | Activity | Map Ref # | Comments  |
|-------|------------|-----------|----------|-----------|---|
| 14:43 | none       | 2         | 3        | 1         | Soaring SW, 2-3 canopy height, lost sight in sun/clouds (HE)                    |
| 15:05 | none       | 1         | 3        | 2         | Flew S across lake at 2-3 canopy height, continued along the west bank (HE/BA)  |
| 15:06 | none       | 3         | 3        | 3         | Flying at 2-3 canopy height, circling (HE)                                      |
| 15:06 | none       | 3         | 3        | 4         | Flew directly overhead at 1 1/2 canopy height (BA)                              |
| 15:07 | none       | 1         | 3        | 5         | Flying at 2-3 canopy height, circling (HE)                                      |
| 15:15 | none       | 1         | 3        | 6         | Flew south along west shoreline (HE)  |
| 15:19 | none       | 3         | 3        | 7         | Flew S at 2 canopy height along W bank, called after out of sight (BA/SH)       |
| 15:20 | none       | 1         | 3        |           | 3 individual eagles in same area flying different directions (SH)               |
| 15:23 | none       | 3         | 3        | 8         | Soaring, circling at 1 1/2 canopy height on E side of lake ((HE)                |
| 15:24 | none       | 1         | 3        | 9         | Soaring S over lake (HE)  |
| 15:26 | none       | 3         | 3        | 10        | Soaring SE 1 1/2 canopy height over E side of lake (HE)                         |
| 15:27 | none       | 3         | 3        | 11        | 2 eagles soaring, circling (HE)   |
| 15:28 | none       | 1         | 3        | 12        | Eagle flew N hugging W side, circling continuously (BA)                         |
| 15:30 | 2          | 1         | 1,3      | 13        | Eagle perched 1/2 way up small snag, flew overhead, circled W up the creek (HE) |
| 15:32 | none       | 1         | 3        | 14        | Flushed up towards the dam (HE)   |
| 15:34 | none       | 3         | 3        | 15        | Soaring/circling at 2-3 canopy height (HE)                                      |
| 15:41 | none       | 3         | 3        | 16        | (#15:28) joined by two other eagles, circling (BA)                              |
| 15:45 | none       | 1         | 3        | 17        | Flew S along W side of lake until out of sight (MW)                             |
| 15:48 | none       | 3         | 3        | 16        | (SH)  |
| 15:50 | none       | 1         | 3        | 16        | 3 eagles soaring/circling (SH)  |
| 15:51 | none       | 3         | 3        | 16        | 2 eagles joined the others, 5 total (BA)  |
| 15:55 | none       | 2         | 3        | 16        |   |

Figure 10. Baker River Project bald eagle night roost survey data form, January 15, 2010, page 1.





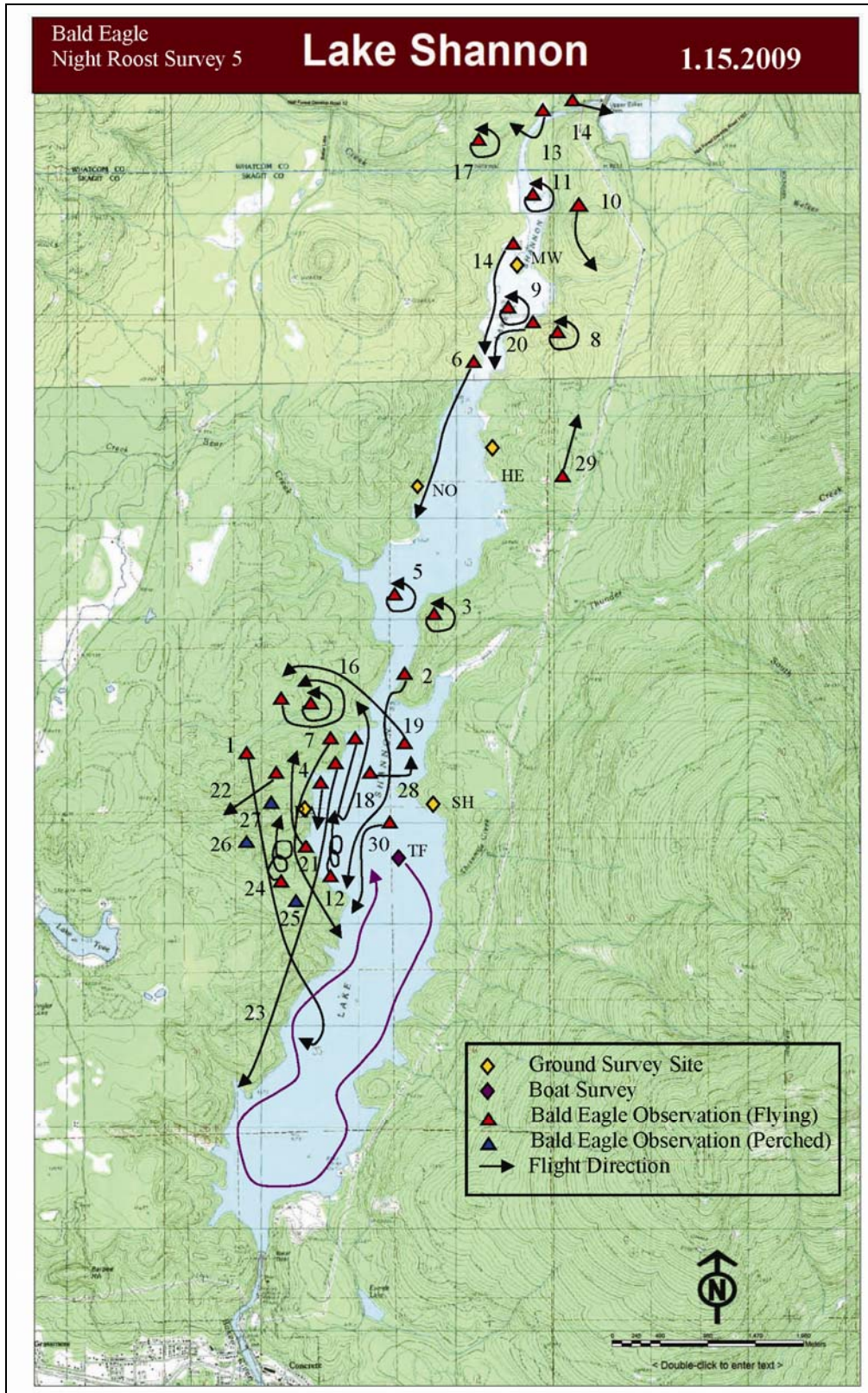


Figure 11. Map of Baker River Project bald eagle night roost survey observations, January 15, 2010.



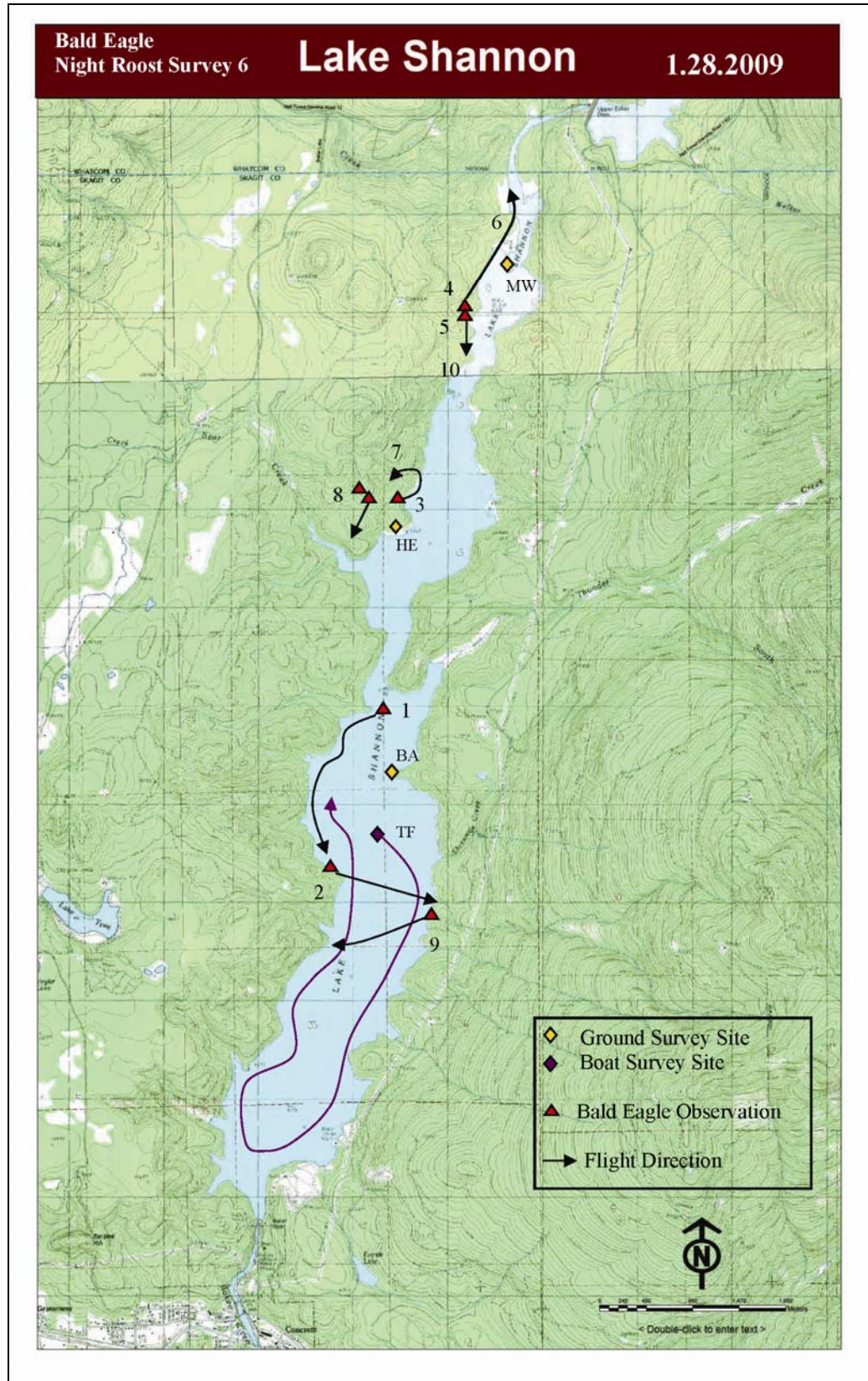


Figure 13. Map of Baker River Project bald eagle night roost survey observations, January 28, 2010.



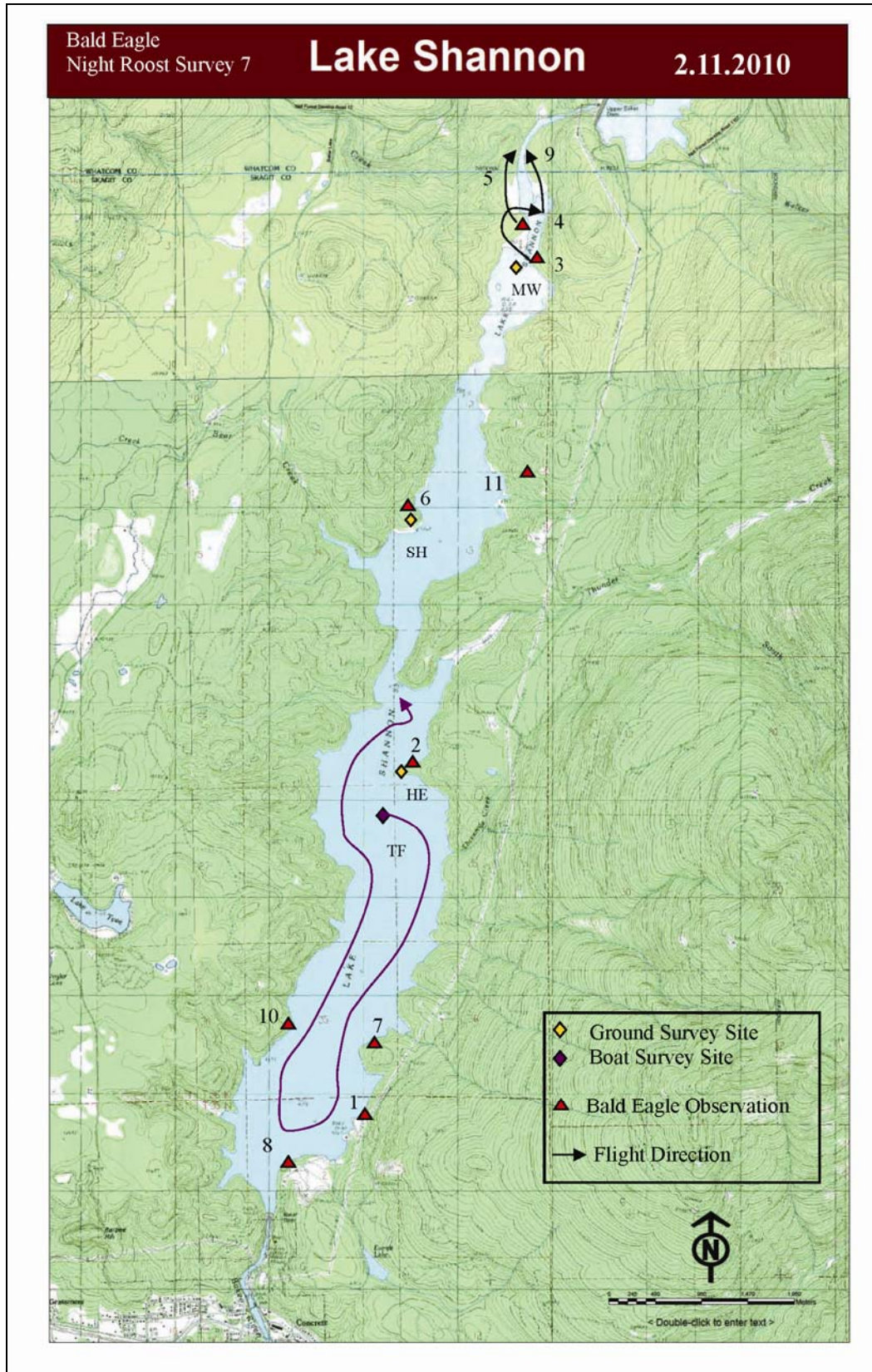


Figure 15. Map of Baker River Project bald eagle night roost survey observations, February 11, 2010.



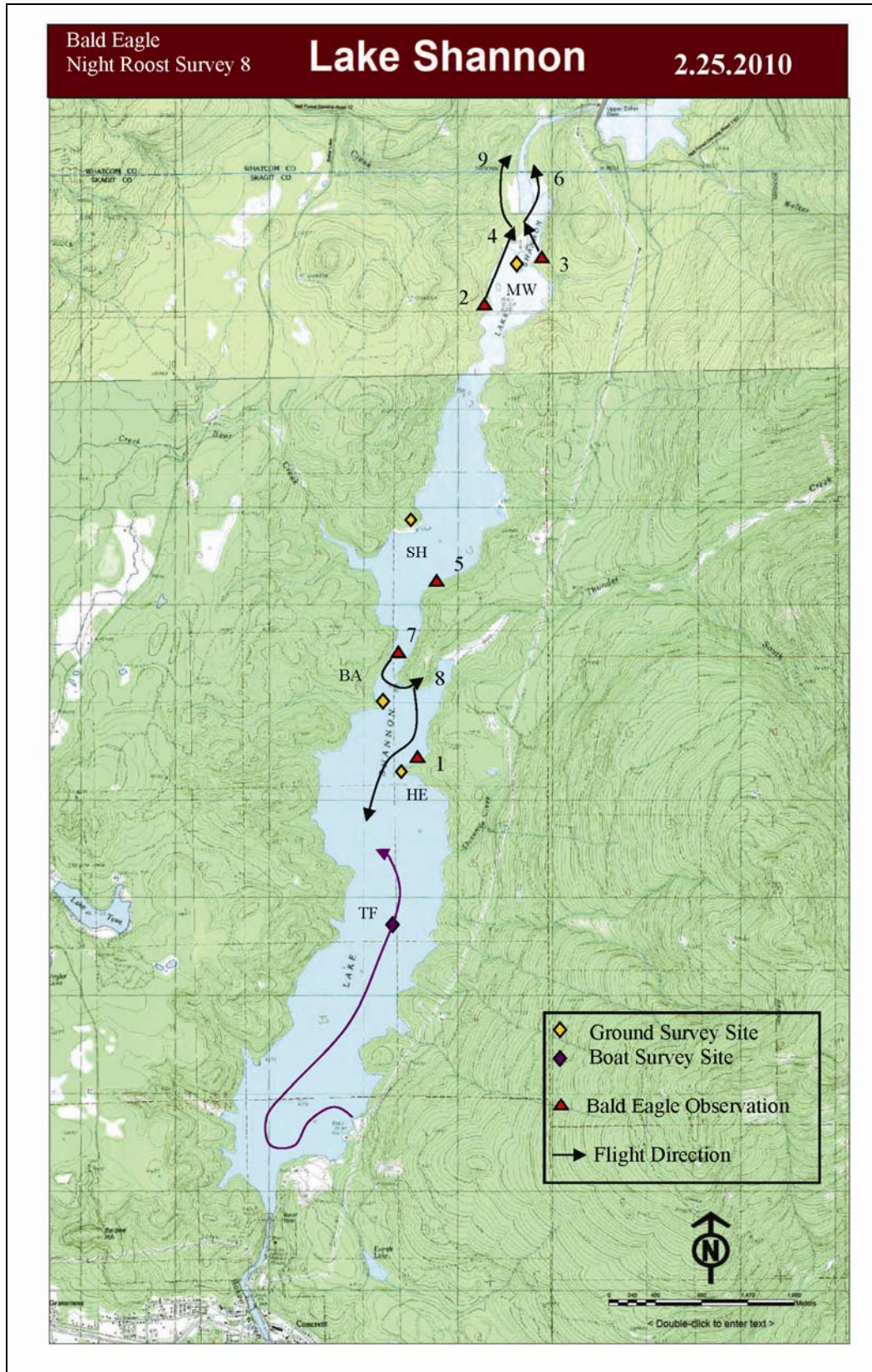


Figure 17. Map of Baker River Project bald eagle night roost survey observations, February 25, 2010.

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